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### **Plasticating Screw for Efficient Melting and Mixing of Polymeric Material**

**ABSTRACT:** A new plasticating apparatus including a rotating and reciprocating screw having a helical flight that is wrapped around a core, disposed within and cooperating with the inner wall of a heated barrel that substantially increases the melt quality of a polymeric material. This is accomplished by incorporating an increase in the helix angle of the primary flight at the taper terminus of the transition section, in cooperation with a stepped change in the root that terminates either upstream or downstream of the end of one complete revolution of the flight.